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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,068	01/22/2004	Xiaogang Peng	40715-296579	3712

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EXAMINER

YAMNITZKY, MARIE ROSE

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	Application No. 10/763,068	Applicant(s) PENG ET AL.	
	Examiner Marie R. Yamnitzky	Art Unit 1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 January 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-108 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-108 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-12, 18-28, 33-37, 42-57 and 82-95, drawn to a composition comprising, or population of, core/shell nanocrystals, classified in class 428, subclass 403.
- II. Claims 13, 29 and 38, drawn to a light-emitting diode, classified in class 428, subclass 690.
- III. Claims 14, 30 and 39, drawn to a biological labeling agent, classified in class 424, subclass 9.1.
- IV. Claims 15, 16, 31 and 40, drawn to a photoelectric device such as a solar cell, classified in class 136, subclass 243.
- V. Claims 17, 32 and 41, drawn to a laser, classified in class 372, subclass 39.
- VI. Claims 58-81 and 96-108, drawn to a method of making core/shell nanocrystals, classified in class 427, subclass 215.

The inventions are distinct, each from the other because of the following reasons:

Inventions of Group VI and Group I are related as process of making and product made.

Inventions of Group VI and Groups II, III, IV and V are somewhat related as process of making and product made. The inventions are distinct if either or both of the following can be shown:

- (1) that the process as claimed can be used to make another and materially different product or
- (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product as claimed can be made by a materially different process such as contacting a core material simultaneously with cation and anion components of

the shell composition. Further, in the case of Groups II, III, IV and V, the method as claimed does not directly make the product as claimed, but instead makes a component of the product.

Inventions of Group II, III, IV and V and of Group I are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the subcombination as claimed encompasses a plurality of patentably distinct species, and the combination does not require the particulars of each of the patentably distinct species. The subcombination has separate utility such as in a radiation image storage panel, or various photoluminescent products.

Inventions of Groups II, III, IV and V are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the different inventions are not disclosed as capable of use together, they have different designs (the structure required to meet the preamble recitations in the claims of these Groups is much more than specified within the bodies of the claims of these Groups), different modes of operation, and different effects.

Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art in view of their different classification, and the

inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

In addition to the preceding restriction requirement, an election of species is required.

With respect to Groups I-VI, this application contains claims directed to the following patentably distinct species of various core/shell structures, products incorporating such core/shell structures and methods of making such core/shell structures:

- (A) a core/shell structure consisting of a core and a single shell
- (B) a core/shell structure consisting of a core and two shells
- (C) a core/shell structure consisting of a core and three shells
- (D) a core/shell structure consisting of a core and four or more shells

wherein for each of (A), (B), (C) and (D), the core material is selected from (i) a II/VI compound, (ii) a III/V compound, or (iii) something other than a II/VI or III/V compound

wherein for each of (A), (B), (C) and (D), each shell material is individually selected from (i) a II/VI compound, (ii) a III/V compound, or (iii) something other than a II/VI or III/V compound

wherein for (A) the band gap of the core material is (a) less than the band gap of the shell material or (b) is greater than the band gap of the shell material

wherein for (B), (C) and (D) the band gap of any shell material is (a) less than the band gap of both adjacent core and/or shell materials, (b) greater than the band gap of

both adjacent core and/or shell materials, or (c) neither (a) nor (b).

The species are independent or distinct because the different species of core/shell structures as set forth above do not overlap in scope, i.e., are mutually exclusive.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, no claims are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. Applicant is also required to elect an ultimate species of core/shell structure (i.e. a core shell structure in which the specific composition of the core and each shell is specified) that will be used as the starting point for search and examination purposes. For example, a core/shell structure consisting of a core and a single shell in which the core is CdSe and the shell is CdS is an ultimate species of (A)(i)(i)(a). An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

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Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse.

Should applicant traverse on the ground that the inventions or species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions or species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C.103(a) of the other invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

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The current fax number for all official faxes is (571) 273-8300. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY

March 20, 2006



**MARIE YAMNITZKY  
PRIMARY EXAMINER**

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